


Crystal Llerena

Contemporary Issues in the Fashion Industry (BUF 4700-OL85)

Dr.Munroe

Smart textile classification

In recent years, there has been a growth of popularity around E-textiles from a commercial standpoint. Although this industry has been around for decades, recent recognition has propelled the industry unto consumer awareness and a player in the fashion industry. There have been many strides within this industry in terms of innovations and unique concepts. Many researchers within the E- textiles industry, classified different types of textiles, which are: Passive smart, active smart, and very smart textiles. Passive smart textiles have a perception to understand the environment surrounding it by transmitting its sensors to a processor and then react in the appropriate way. . Therefore these textiles have sensors to react to, “this might include mechanical, thermal, chemical, electrical or magnetic states” depending on the functionality of the textile (Kettley, 2016, pp. 13-15). This type of e-textile doesn't need to be controlled by the user but rather from a processor to conduct the usage of the textile and stay persistent. 

The second type is active smart textiles, as opposed to the passive smart textile that functions with a central processor, this textile can work without one. The way this textile responds is either from the user by motion or changes from the outer environment such as weather conditions. Active smart textiles utilizes electricity based on actuators and or sensors to sense different externalities. The third and final type of e-textile is very smart textiles, and is considered to be the top- level of smart textiles. This textile can adapt, sense and perform into what the external environment conditions are. This textile is responsive to outside factors because it incorporates a component that acts like a “brain” to generate analyzing, comprehension and

activity. This is why this e-textile is considered to be the most complex system compared to the other e-textiles because they “have the ability to react to multiple contextual information (Kettley, 2016, pp. 13-15).

An example of a passive smart textile is one that incorporates UV protection. A company that produces fibers embedded with UVA and UVB protection called Mynx is an example of this. “Mynx® is a dependable sunscreen that's part of the fiber. Fabric made with all-day sun protection offers up to 50 UPF in wet or dry conditions” (Unifi, 2019). Its main components are to guard against damaging rays that affect factors such as aging and burning from the sun in any weather condition. Passive smart textiles doesn't alternate its response because of the changing environment and so it ultimately maintains the same output regardless. The dependable function that needs no user control in passive textiles describes Mynx because it provides the garment with “ fabric made with all-day sun protection offers up to 50 UPF in wet or dry conditions”(Unifi, 2019). This passive smart fiber can be found in a plethora of garments and accessories, such as rash guards (see figure 1).

By adapting and changing its ability in function, active smart textiles can change due to the external environment. An example of this textile is by an e-textile company called Loomia, in particular their heated wool jacket called the “Loomia H1”(see figure 2). This textile is dependent on user control or a controlled panel, as is in the case of Loomia’s heated jacket because of its battery operated system. A garment that regulates its body temperature is usually classified as an active smart textile because it uses sensors to ensure a stabilized temperature for the user. Loomia uses a computer device to create the heated feature. According to Vogue business, “At the jacket’s

heart is a thin, flexible, wire-free circuit board called the Loomia Electronic Layer (LEL). This motherboard controls the heated ability and defines how active smart textiles can be determined by having one single aesthetic indicator that allows its function to work and remain on.

The complexities offered by very smart textiles indicates its vast understanding of adapting and responding to the environment in a vigorous way. These textiles intelligently detect externalities and output their response. An example of this type of textile is from a fashion studio called The Unseen. They developed a collection called Air, that features garments and accessories. “Each is embedded with a specially developed ink, causing the material to change colour in response to different environmental conditions” (Howarth, 2016). This textile differs from passive and active because there is no control from outside sources instead the textile itself is embedded with technologically new fibers and materials. This can be seen from the air collection of the fashion studio, The Unseen, (see figure 3) a wallet that reacts when touched by changing its visual appearance through color.

In conclusion, these innovative categories of e-textiles have gathered much curiosity in the last few decades because of its groundbreaking concepts. With the help of scientists and researchers, the industry of apparel and textiles can create designs and fabrics by using materials and technologies that bring life to them. There is now a bigger interest in commercializing these smart textiles because of the awareness it gathers among consumers. According to the Journal of Textile Science and Engineering, “The global markets of smart textiles are expected to reach USD 1500 million” (Sarif Ullah Patwary, 2015, p. 7).



Figure 1 Unifi. (2019, September 11). *Mynx® - All-Day UVA/UVB Sun Protection.*
<https://unifi.com/innovations/mynx>

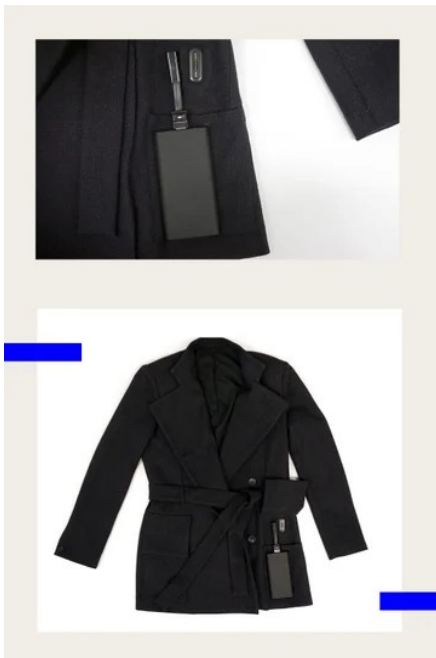


Figure 2 Vogue Business.(2020, September 7). *Why electronic garments are the next fashion frontier.* <https://www.voguebusiness.com/technology/loomia-heated-electronic-jacket-e-textiles>



Figure 3 Dezeen.(2016, December 6). *The Unseen's Air fashion accessories change colour in different climates.* <https://www.dezeen.com/2015/11/06/the-unseen-air-fashion-accessories-change-colour-design-selfridges-london/>

References

Howarth, D. (2016, December 6). *The Unseen's Air fashion accessories change colour in different climates*. Dezeen. <https://www.dezeen.com/2015/11/06/the-unseen-air-fashion-accessories-change-colour-design-selfridges-london/>

Kettley, S. (2016). *Designing with Smart Textiles (Required Reading Range, 56)*. Fairchild Books.

McDowell, M. (2020, September 7). *Why electronic garments are the next fashion frontier*.

Vogue Business. <https://www.voguebusiness.com/technology/loomia-heated-electronic-jacket-e-textiles>

Unifi. (2019, September 11). *Mynx® - All-Day UVA/UVB Sun Protection*.

<https://unifi.com/innovations/mynx>